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Environmental Issues in Finnish School Textbooks on Religious Education and Ethics

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Abstract: Solving global environmental problems requires a major change of values. As relates to environmental education, worldview, ethics and spiritual issues are important elements. But how are environmental issues included in such school subjects that especially discuss values and ethics? In this article I examine 24 Finnish religious education and ethics textbooks to analyze, to what extent environmental issues are integrated and discussed in them. I conclude that there is confusion about what environmental education can be in societal school subjects. The environmental texts in textbooks do not always draw on the specific content of the societal subject in question but repeat content from the natural sciences. Therefore, I suggest contexts and perspectives for discussing environmental issues that would comport with these subjects and supplement existing environmental education at school.

KEYWORDS: ENVIRONMENTAL EDUCATION, INTEGRATION, TEXTBOOKS, RELIGIOUS EDUCATION, SECULAR ETHICS EDUCATION

About the author: Essi Aarnio-Linnanvuori is a PhD candidate at the Department of Environmental Sciences, University of Helsinki, since 2010. Her research interests comprise interdisciplinary environmental education, especially teaching of environmental ethics and environmental citizenship. She has ten years of experience of working in different environmental education programs, such as international Eco-Schools program and education program of WWF Finland. She is also president of The Finnish Association for Environmental Education (FAEE).

Introduction

Environmental education should [...] be interdisciplinary in its approach, drawing on the specific content of each discipline in making possible a holistic and balanced perspective. (The Tbilisi Declaration 1978.)

The environmental crisis is a crisis of society. The phenomena of marine pollution, desertification and global warming can be explained by natural science but their causes and solutions are created by human beings. Solving global environmental problems requires a major change of values. This relates to environmental education: learning natural science is not enough for a person to develop environmental responsibility. Environmental education is considered to be interdisciplinary, with an emphasis on both nature study and environmental citizenship. (Feng 2012, Orr 1992, 92–95.) Worldview, ethics and spirituality belong to environmental education as relevant elements (Jickling 2005, Palmer 1998a, Solomon 2003). World religions provide great possibilities for discussing environmental values (Toh & Cawagas 2010).

In the context of the Finnish basic education, the interdisciplinarity of environmental education appears to be taken into consideration. In the national curriculum ‘Responsibility for the environment, well-being and a sustainable future’ is an integrated, cross-curricular theme that is intended to be taught in all school subjects. Environmental issues have been included in subject curricula of both Lutheran religion (LR) and secular ethics (SE); subjects that discuss worldview, ethics and spirituality as phenomena. Environment and human relationship with nature are among the major themes in SE and also mentioned in the LR subject curricula. (Finnish National Core Curriculum for Basic Education 2004, hereinafter NCC 2004.) It seems reasonable to expect that the textbooks used for LR and SE classes would also discuss environmental issues from the perspective of values, worldview and spirituality.

But, is this indeed the case? In this article I examine all current Finnish basic education textbooks on LR and SE to understand, to what extent the textbooks discuss societal and scientific aspects of environmental problems, and how well they relate to education *about*, *in* and *for* the environment (see Palmer 1998b, 142–145). I will argue that there is confusion about the role of religious education (RE) and SE in environmental education in schools. Integrating interdisciplinary, cross-curricular issues in textbooks contains an element of risk for textbook authors. The environmental texts do not necessarily draw on the specific content of the subject in question but rely on repeating content that rather belongs to natural sciences. Textbooks also contain inaccurate and unclear information.

Nevertheless, there are some pedagogically interesting examples of successful integration of environmental issues in the textbooks analyzed. Based on these examples and the theoretical framework of the study I will suggest ideas to be considered when integrating cross-curricular topics into textbooks or teaching.

First, I will describe the role of ethics and spirituality in recent environmental education literature, and then go on to explain characteristics of the Finnish basic education context. In the subsequent sections I discuss the analysis framework, data and method. The results section covers three main parts: perspectives of information *about* the environment, education *in* the environment and education *for* the environment. The article continues with a discussion of ideas derived from the results, and conclusions.

Role of ethics and spirituality in environmental education

Environmental ethics is an essential element of environmental education. Values-based education was referred to in the Tbilisi Declaration (1978), one of the ‘foundation stones’ of environmental education literature. Ethics has been a topic of discussion and development in environmental education ever since. As Raymond Benton Jr. and Christine S. Benton (2004, 239) point out, environmental ethics ought to be taught consciously because it is already taught implicitly. While learning about the environment, a pupil always learns about environmental ethics. However, there are different views about the kind of environmental ethics that should be taught.

Clare Palmer (2004) suggests four orientations for teaching environmental ethics. One of these she calls ‘pure intellectualist’ environmental ethics teaching. Students are encouraged to think critically, analyze arguments and develop their own arguments, but there is no aim to influence students’ personal beliefs or promote environmental protection. The second orientation she calls ‘ethical advocacy’. Compared with the ‘pure intellectualist’, this has an additional aim: encouraging students to consider what is ethical and to examine their own lives in respect of the environment. However, no particular outcome of the examination is presupposed.

In the third orientation, ‘environmental advocacy’, there are additional aims beyond the intellectual ones: producing students who live ethical, examined lives with respect *for* the environment. Such teaching advocates respect and care for the environment but does not necessarily advocate a particular environmental ethic. However, the fourth orientation called ‘specific advocacy’ argues that one specific environmental ethic is preferable to others. Other views may also be discussed but they are not presented in equal terms. Palmer (2004, 159–160) concludes that, although there are good reasons for adopting one of the ‘advocacy’ orientations, the main aim of education ought to be enabling critical thinking; which contradicts with the idea of advocacy for a particular end. She asserts that the first two orientations should be preferred. I discuss this view further in the section entitled *Elements of environmental education*.

Bob Jickling (2005) encourages educators and researchers to research and explore the possibilities of ethics in environmental education. He sees ethics as a process of inquiry, but without judgment or pre-decided outcomes. Environmental ethics, he says, ought to be connected to the learners’ everyday lives, to bridge the gap between theory and practice. The subject matter of environmental ethics to be taught can be

diverse. Traditional approach, asking philosophical questions, is still useful, as is discussing, evaluating, and comparing stories (Jickling 2005, 22–26). The subject matter can be place-based or it can reflect the background of the instructor or the students (Palmer 2004, 157–158).

Besides ethics, spiritual experiences in nature are likely to be important factors in a person's growth towards environmental responsibility. Such spiritual experiences can include a sense of awe and wonder, being inspired by nature and recognition of the worth of every human being. They can be secular as well as religious (Orr 1992, 86, Palmer 1998b, 240–244). Young children gain spiritual experiences through their senses, play, and imagination, and this can be taken further in environmental education (Solomon 2003). However, school curricula tend to be discipline-based and have an emphasis on abstract, theoretical problems, which makes it difficult to accommodate the ideas of holistic, experiential, and explorative environmental education (Palmer 1998a, 159–160).

Sustainability in religious and ethical education in the Finnish basic education context

The Finnish model of religious education is a religion-based model to organize religious education in society owned schools. Since 2003, religious education has been 'religious education according to one's own religion'. Finnish society has rapidly become multicultural, and this has increased religious diversity in schools: individual schools might teach six or seven religions. This model is unique, with its emphasis on the right of religious minorities to participate in religious education in state schools (Kallioniemi & Matilainen 2011, 3–5). This model has several advantages in promoting freedom of religion and other human rights, but there are problems too, in separating pupils into different groups by religion and in arranging good-quality teaching for the minority groups (Kallioniemi & Matilainen 2011, 8–9).

The model concentrates on individuals who belong to religious communities. In addition to different religions, schools teach different forms of the same religion, such as Lutheran, Orthodox, and Catholic Christianity. Those pupils who do not belong to any registered religious organisations have an alternative to religious education in a subject called ethics or Life Questions and Ethics (Kallioniemi & Matilainen 2011, 4–5).

Ethics as a school subject has a multidisciplinary background in philosophy, the social sciences and cultural studies (NCC 2004, 214). It shares emphasis and content with religion, health education and social studies but has no background institution or structure of beliefs. International, ethical principles and declarations, such as sustainable development, are considered an acceptable value bases for the subject. Even tensions and contradictions in central concepts of sustainable development can be used as pedagogical tools: they offer possibilities for profound and multidimensional discussions in the classroom (Salmenkivi 2007, 98–101). In the official translation of the national curriculum this school subject is called ethics, but in

this article I prefer to call it secular ethics (SE), to distinguish it from ethics as a field of philosophy and ethics as a subject-matter area in LR. Approximately 92,9% of the pupils in basic education studied LR and 3,2% SE in 2010 (Kumpulainen 2012, 58).

In the current national curriculum (NCC 2004) “responsibility for the environment, well-being and a sustainable future” is one of seven integrated, cross-curricular themes, representing the central emphasis of educational work. The cross-curricular themes are supposed to be incorporated both in subject curricula and in joint events and other cross-curricular work. Some environmental content is included in the subject curricula of almost all school subjects. Biology and geography teachers are usually the most active to discuss environmental issues in their teaching (Uitto & Saloranta 2012, 81), but the perspective of environmental ethics is not included in the core content of either of these subjects (NCC 2004, 176-184). Final assessment criteria for social studies refer to social and economic ethics (NCC 2004, 227) but the perspective of individual environmental ethics belongs to religious education and SE.

Environmental issues are included in the subject curricula of both LR and SE. The subject-specific SE curriculum has a strong emphasis on sustainable development. For years 1–5 (approx. 7–11 year-olds) the objective is to gain an introduction to sustainable development; whereas during years 6-9 (approx. 12–15 year-olds) pupils are expected to adopt the principles of it. Environmental issues and sustainability are also included in the core content and goals of the subject. Aesthetics in nature, the origin and evolution of life, the future of nature and society, conceptions of the relationship between humans and nature, environmental ethics, and world heritage and sustainable development are all mentioned in the core content. Interestingly, the criteria for good performance on the year 5 includes knowing ‘how to act with respect for nature’, whereas the final assessment criteria emphasizes knowing, understanding and evaluating required content (NCC 2004, 214–218).

In Lutheranism environmental issues are a minor theme among others. The objectives or evaluation criteria do not take any explicit notice of them, but in the core content they are mentioned. For years 1-5 ‘*respect for the individual and nature; responsibility and making choices*’ and for years 6-9 ‘*the person as a shaper of his or her own life, the community and the environment*’ is included in the core content (NCC 2004, 202–206).

Elements of environmental education

Since the 1970’s, describing environmental education as education *about* the environment, education *in* or *from* the environment and education *for* the environment has been a popular slogan (Ferreira 2009, 613). Joy A. Palmer (1998b) included these three aspects into her frequently cited planning framework for teaching and learning in environmental education. Since I utilise the model as an analysis tool in this article, I shall give a short introduction to her ideas.

Having knowledge *about* the environment enables pupils to critically evaluate issues and encourages them to appreciate pro-environmental values and attitudes.

Environmental knowledge can be knowledge about the natural environment and changes in it, but also about our complex relationship with the environment and about opportunities for ethical actions. Personal experiences and investigations *in* the environment are important enablers of development of critical awareness and concern. Skills, knowledge, and understanding can be gained by first-hand experiences in natural or built environments. In addition, encouraging pupils to explore their personal response to environmental issues will help them to develop a personal ethic for the environment. Education *for* the environment is issue-based, action-oriented, and problem-solving. Action, concern, and experience support the meaningfulness of environmental education (Palmer 1998b, 143–145).

Palmer's model has the form of a tree with four elements in it. Education *about*, *in* and *for* the environment are pictured as three circles among the branches, indicating that they merge and overlap. The fourth element, formative influences, lies among the roots of the tree (Palmer 1998b, 271–272). Formative influences and significant life experiences have a strong impact on a person's long-term thinking and action. Childhood outdoor experiences, relatives and friends, media and experiences of nearby environmental disasters play a significant role in promoting environmental concern (Palmer 1998b, 240–244).

All these elements are interesting when considering environmental education in such school subjects as LR and SE. Education *about* the environment can address the complex issues of the human-nature relationship and environmental ethics, which are included in the curricula of LR and SE. Education *in* the environment in LR and SE could cover personal experiences in nature, spirituality, and the aesthetics of nature. Education *for* the environment highlights ethics and could therefore well relate to these subjects. In addition to learning *about* environmental ethics, the subject curricula could include elements of action and reflection of pupil's own understanding, values and attitudes. The formative influences are pre-supposed and cannot be planned for, but it is important for educators to be aware of them when planning environmental education (Palmer 1998b, 270–271).

Over the years, there has been plenty of discussion about the relevance and justification of these elements, especially education *for* the environment. Critics have warned about the slogan evolving into an operational doctrine, and have questioned the justification of education for any particular end (Jickling & Spork 1998, Jickling 2009). The defenders of education *for* the environment have argued that it is not indoctrination, but provides a professionally ethical way of teaching (Fien 2000), or that the severity of the existing environmental crisis requires ecocentric environmental education (Kopnina 2012). More detailed discussion can be found in the literature (e.g Ferreira 2009). However, my aim in this article is not to take a stance in *this* discussion. I assume that all of them can and do exist in some form in the current practice of education. Palmer's (1998b) planning framework for teaching and learning in environmental education represents the central traditions of environmental education, and therefore serves well as an analysis framework for this article.

Data

The data consists of all 24 basic education (years 1–9) LR and SE textbooks written in Finnish that were on the market in August 2012. I analyzed only the printed text; including figure descriptions and assignments. Figure 1 presents how the textbooks are divided between years and subjects. All analyzed textbooks are listed at the end of the article.

LR years 1-6	SE years 1-5	LR years 7-9	SE years 6-9
Matka Eedeniin 3–4 [Journey to Eden]	Miina, Ville ja vintiöt [Miina, Ville and the rascals]	Eeden 7–9 [Eden]	Etiikkaa elämän-katsomustietoon [Ethics for secular ethics]
Matka Eedeniin 5	Miina, Ville ja kulttuurin arvoitus [Miina, Ville and the cultural puzzle]		
Matka Eedeniin 6	Miina ja Ville etiikkaa etsimässä [Miina and Ville searching for ethics]		
Suuri kertomus 1–2 [The great story]		Lipas 7 [Chest]	Katse [Look]
Suuri kertomus 3–4		Lipas 8	
Suuri kertomus 5–6		Lipas 9	
Tähti 1 [Star]		Majakka	Reilu peli [Fair play]
Tähti 2		Uskontokirja	
Tähti 3		[Lighthouse religion book]	
Tähti 4			
Tähti 5			
Tähti 6		Noviisi 7–9 [Novice]	

FIGURE 1. THE TEXTBOOKS ANALYZED.

Finnish basic education in comprehensive school lasts nine years. Although comprehensive schooling is based on a single structure, it is common that the first six years are in one school, and the final three years in another school. The national curriculum, however, defines core aims and contents for years 1–5 and 6–9 for both LR and SE. Despite this, the publishers of the LR textbooks have chosen to follow the

traditional transition from primary school to the middle years after year six, and have therefore produced textbook series for years 1–6 and 7–9. *Miina ja Ville* is the only SE textbook series for younger children, and is aimed at years 1–5. The other SE textbooks are for years 6–9.

In three LR textbook series (*Eeden*, *Majakka* and *Noviisi*) there are two versions available for years 7–9: either individual books for each year or a joint volume for all three years. I chose to analyze the joint versions as these were in most cases newer. According to the publishers, no major differences exist between the joint and separate versions.

As SE is studied by a minority of pupils, there are fewer textbooks available for the subject than for LR. Currently there are three textbooks available for years 6–9, but in fact only one of them (*Katse*) covers most of the subject-matter of all four years. The textbook *Etiikkaa elämäkatsomustietoon* is solely for ethics and does not cover other required areas, such as citizenship, general philosophy, culture, and the future. The third SE textbook, *Reilu peli*, is meant for citizenship education, and does not discuss the basics of environmental or other ethics.

Method

This is a qualitative content analysis of textbooks. The research strategy is abductive: the approach to reasoning is not entirely inductive (deriving from data) but is instead based on continuous interaction between the data and previous literature (see e.g. Paavola 2006). Qualitative content analysis focuses on the interpretation of the content of text data through a systematic classification process. This means classifying large amounts of text into an efficient number of categories, and coding and identifying patterns. The goal is to understand the phenomenon being studied (Hsieh & Shannon 2005, 1278). I chose this method because my main interest was the meaning of the content and gaining an understanding of the general impression of environmental issues created by the textbooks.

Techniques of content analysis can be divided into three main approaches. Conventional content analysis seeks to be truly inductive, where the coding categories are derived from the text data. In directive analysis, a theory or relevant previous research guides the coding, and the process is deductive. Summative content analysis processes begin by counting of keywords but extend to interpretation of the underlying meanings of the content (Hsieh & Shannon 2005).

I began the analysis process with a technique that is similar to the conventional content analysis, with no defined expectations of the outcome. This was justifiable because there is little previous literature on the research problem of this study – environmental issues as subject-matter in religious and ethical education. I read through the data carefully several times, extracting sections discussing nature and environmental issues. I did the first coding inductively, deriving the coding categories from the data. However, as there is a large body of literature on environmental education in general, I examined previous research alongside the data, searching for

congruences and divergences. For results presentation purposes, I decided to adopt the traditional elements of environmental education. This required recoding the data, though the initial coding was also used to create sub-categories. Thus, the reasoning process became rather abductive than inductive.

The qualitative analysis is interpretive by nature, and therefore always subjective to some extent. It is the duty of the researcher to convince the reader that the findings are significant and valid. To ensure the trustworthiness of the study I have followed systematic methods of analysis, and I present direct reference and quotations from the data. Following the principle of fairness (e.g. Guba & Lincoln 2005, 207) I have been careful to test my observations by searching for opposing viewpoints and allowing space in the text to present diverse findings.

Results

All the textbooks or textbook series analyzed incorporate environmental issues at least to some degree. However, the extent of the environmental texts is usually very small. In line with the national curriculum, there is more environmental discussion in the SE textbooks than in the LR textbooks.

Most of the environmental texts analyzed are informative; information *about* the environment. They discuss the human relationship with nature, environmental ethics, the state of the environment and interaction between society and environment. They also include stories that take place *in* nature, and texts that encourage spending time *in* nature. Other texts encourage reflection about action *for* the environment. Informative texts form a major part of environmental texts in textbooks for years 7–9. Stories with nature as the stage of events are common in textbooks for years 1–6.

Many of the textbooks have a specific chapter for discussing environmental issues. In textbooks for years 1–6 these are often stories – a boy meeting a goose at a lake (*Suuri kertomus* 3–4, 124–125), admiring the landscape in the countryside (*Miina, Ville ja vintiöt*, 90–91) – but they can also be informative texts. The upper years' textbooks concentrate on providing information. However, some textbook authors have chosen to integrate environmental issues into more general contexts. *Eeden* 7–9 discusses environmental ethics in the context of the Ten Commandments. *Matka Eedeniin* 5 discusses everyday ethics in a long story about a village threatened by a flood. Although there are hardly any explicit environmental messages in the story, I detected references to some implicit environmental issues (such as environmental hazards, climate change, and criticism of consumerism). Textbooks with a specific environmental chapter sometimes mention environmental issues in other relevant contexts.

All the LR textbooks or textbook series for years 7–9 view environmental ethics in a Christian context to some extent. Mostly they refer to man's place in nature according to the Creation stories in Genesis. The SE textbooks do not discuss Christian or other religious perspectives to environmental issues.

Information about the environment in the textbooks

In the category of education *about* the environment I coded mentions about environmental issues that were mainly of an informative character. These included both scientific information and societal and philosophical information. I determined the subcategories part directly from the text (repeated themes and entities), and part using the environmental protection process (EPP) framework of Petri Tapio and Risto Willamo (2008). The framework describes the process of how and why environmental problems are caused, what their characteristics are and how they can be mitigated. The framework and its submodels discuss changes and impacts in both the ecological and human environment. In particular, they discuss measures for solving environmental problems and different societal and individual factors that affect the process. The classification of data in this study does not follow the framework in detail, but is consistent with the basic concept of the process.

Figure 2 shows the frequency of occurrence for selected issues in the textbooks.

	LR 1-2	LR 3-4	LR 5-6	SE 3-5	LR 7-9	SE 7-9
Information about nature and natural sciences						
Information about the state of the environment and environmental change						
Information about the reasons of environmental problems						
Information and discussion about the human-nature relationship						
Information about the impacts of environmental problems on society						
Information about the solutions to environmental problems						
Information about the basic principles of environmental ethics						

FIGURE 2. INFORMATION ABOUT THE ENVIRONMENT IN THE TEXTBOOKS OF SCHOOL YEARS 1-9.

No mentions ☐ Mentioned in one or more of the textbooks, but not discussed ☐ Mentioned several times or discussed briefly ☐ Moderate discussion ☐

Nature and natural sciences

Many of the textbooks include scientific text without specific emphasis on environmental problems. The LR textbooks for years 1–5 in particular provide information about nature which serves the purpose of making the text lively and interesting. The *Suuri kertomus* -series adds occasional background information and

interesting details about nature in Palestine: facts about climate, geography, vegetation and species. For example, *Suuri kertomus 1-2* (33) describes the Palestinian climate and names some typical species (olive tree, date palm and fig).

In the textbooks for years 6–9 and in the *Miina ja Ville* -series, scientific information emphasizes concepts and serves as background information for environmental or other issues. The textbooks explain photosynthesis, the food chain, biodiversity, evolution, the greenhouse effect, natural climate variability, and the Ice Age. In some cases discussing a natural phenomenon is the main point in a text. For example, the chapter ‘Food comes from nature’ in *Miina, Ville ja vintiöt* (98) explains photosynthesis and the food chain. More often though, scientific information is as an introduction to other issues. Explaining the green house effect, for example, serves as a stepping stone to climate issues. Evolution is discussed in the context of the human relationship with nature (*Katse*, 63, 194) or the relationship between science and religion (*Majakka*, 251, *Noviisi*, 154).

State of the environment and environmental change

Environmental change is discussed mainly in the textbooks for years 7–9 but also to a limited extent in the *Miina ja Ville*, *Matka Eedeniin 6* and *Tähti 6* textbooks. Many of the books make general statements about humans changing their environment. Some of these statements are neutral: ‘Even though humans are part of nature, they also modify nature. Nature in a city is mainly modified by humans [...]’ (*Miina, Ville ja vintiöt*, 88.) Nonetheless, most statements describe manmade change in the environment as a negative impact. *Majakka* (365) notes that plants and animals have to give way to humans even though they also need space. *Eeden 7–9* (363), *Katse* (187) and *Noviisi 7–9* (329) refer to anthropogenic ecocatastrophes or ecological crises.

The books mention several environmental problems explicitly. Eight textbooks discuss climate change or global warming, and many of them also mention desertification, deforestation, biodiversity loss, nuclear disasters, ozone depletion, air or water pollution, or environmental poisons. Oil spills in the sea are presented in pictures but not discussed in the text. Local environmental problems are rarely mentioned. Some exceptions exist: a story about boys vandalizing plants in a school yard (*Suuri kertomus 3–4*, 120–121) and a seaside village preparing for dangerous flooding, which may be caused by human action (*Matka Eedeniin 5*).

In general, the textbooks give a gloomy picture of the state and future of the environment; describing it with pessimistic, dramatic expressions. *Noviisi* (330) and *Katse* (232, 253–255) write about ecocatastrophes and destruction of the planet as the ultimate ecocatastrophe or the end of the world. Fortunately humans cannot destroy the whole planet – they can, as *Noviisi* (330) notes, only destroy their own ability to live on it. *Majakka* (371) writes about the destruction of nature, and *Reilu peli* (114) asks, whether our planet will turn into a waste ball. *Katse* (249) also reports that humankind has never been able to provide food for all individuals. Overall, environmental problems are usually described as severe but distant.

In some cases, the textbooks analyzed provide incorrect or unclear information. The greenhouse effect is falsely called an environmental problem or used as a synonym for climate change. Some of these cases seem to be simply lapses (e.g. *Katse* 205), and the same textbook also presents accurate information. However, in other cases a confusing picture is given. *Reilu peli* (114) refers to greenhouse gas emissions as ‘rubbish’ and ‘particles floating in the atmosphere’ which is inaccurate and misleading. Likewise, *Majakka* (371–372) combines waste, pollution, climate change and ozone depletion in such a manner that the reader is likely to be confused about the causal relationships between the problems.

Reasons for environmental problems

The reasons for environmental problems are not discussed in depth in most of the textbooks analyzed, although all textbooks for years 7–9 mention at least some cause. Factors affecting human action are split into individual and societal factors (Tapio & Willamo 2008, 129). Most of the causes mentioned relate to society, and particularly to economy: overconsumption, economic growth, wasteful use of resources, international trade, and industrialisation. For example, *Eeden* 7–9 (363) warns that ‘extreme pursuit of productivity and efficacy has its dark sides’.

In contrast to Finnish social studies textbooks (see Aarnio-Linnanvuori & Ahvenisto 2013), criticism of the ideology of unlimited economic growth is fairly common in the LR and SE textbooks. This might be because of the different background disciplines. Social studies textbooks are expected to present basic concepts of mainstream economics, while LR and SE textbooks have no such expectations.

Other societal causes mentioned relate to science (technological innovations) and administration (contravening safety regulations at a nuclear plant). *Reilu peli* (111) names population growth as the main reason for unsustainability. Interestingly, none of the textbooks refer to politics, legislation or religion as causes of environmental problems, whereas all of these are mentioned in connection with solutions to problems.

Some of the textbooks discuss how knowledge, values and worldview affect the environment. *Lipas* 9 (112) and *Etiikkaa elämäkatsomustietoon* (54) criticize the western consumption-centred lifestyle. *Tähti* 6 (80) cites selfishness and indifference as reasons for major problems in the world. *Noviisi* 7–9 (329–330) considers the environmental crisis a question of both societal and personal ethics. *Eeden* 7–9 explains environmental problems through symbolic, religious language:

According to the Bible humans tend to break the life-protecting boundaries set by the Creator. [...] They succumb to selfishness, pride and disobedience. (Eeden 7-9, pp. 294-295.)

Lipas 9 (111) and *Etiikkaa elämäkatsomustietoon* (53) remark that most Finns appreciate nature but only few are willing to lessen their standard of living for conservation purposes. *Etiikkaa elämäkatsomustietoon* (53) refers to people who

leave it to others to care for the environment. Furthermore, both these textbooks and *Katse* (187) name ignorance as a cause of environmental problems.

Human relationship with nature

The human relationship with nature is the most widely and profoundly discussed environmental topic in the textbooks for years 7–9, and many of the textbooks for years 1–6 also mention it. The LR and SE school subjects display a major difference in their perspectives, however. While the SE textbooks discuss the topic from a general western perspective, the LR textbooks have two aspects: general and Christian. The LR textbooks for years 1–4 rarely discuss the human-nature relationship, and then only from a religious perspective. Such mentions are most often in connection with Creation and are normative:

We ought to live together, respecting nature. God protects us all – we are in God's palm. (Tähti 1, 85.)

Comparing and presenting several perspectives is more common in textbooks for years 5–9. All LR textbooks present the Christian perspective exists in along with a more general one. Humans are considered to be in God's image with a responsibility 'to work and to take care of' the earth. The LR textbooks also underline that humans are part of nature and are connected to other species. For example, they explain human responsibilities towards nature according to stewardship ethics: '[Humans] may benefit from the land, but they also have a duty to protect God's creation' (*Lipas* 9, 111). Four textbooks also mention Saint Francis of Assisi as the Patron of Ecology.

All the LR textbook series for years 7–9 address several world religions and sometimes comment on their environmental standpoints. All four textbook series mention nature in connection with Shintoism and Chinese, ancient and native religions, and some also with Hinduism, Buddhism, Judaism and the Wicca-religion or Neopaganism. However, most of these mentions tend to be short and generalized:

Our ancient forefathers lived close to nature. [...] Nature and the world around it were considered to be sacred. (Majakka 114.)

The SE textbooks discuss world religions very little. Instead, many of the SE textbooks discuss different western ecological philosophies. Three of these books and the LR textbook *Lipas* 9 refer to attitudes towards nature: utilitarianism, humanism, mysticism, and eco-centrism or bio-centrism. Utilitarianism is criticized as short-sighted, while eco-centrism is considered the most pro-environmental but difficult to implement. *Katse* (29) and *Miina ja Ville etiikkaa etsimässä* (75) also ask readers to consider their own attitudes towards nature according to these philosophies.

Impacts on society

The impacts of changes in the environment on society are discussed very little in the textbooks analyzed. Some textbooks mention poverty, environmental injustice, famine, health issues or impacts on distant nations and future generations, but only *Katse* discusses these more widely. For example, *Katse* (189) describes the collapse of

society that occurred on Easter Island as a result of environmental change. *Tähti 6* (94–95) mentions environmental conflicts and societal problems caused by rising sea levels.

Solutions

Answers to what can be done for the environment include technical solutions, societal solutions, and requirements to change thinking and attitudes. However, most of the textbooks offer very few solutions. The discussion usually focuses on sustainable development as a meta-solution and recycling. I will discuss recycling more closely in connection with individual pro-environmental behaviour.

In the textbooks, sustainable development is defined as development that takes future generations into account (*Noviisi* 7–9) or is discussed by introducing the ecological, economic and societal aspects (*Katse*, the *Miina ja Ville* -series and *Reilu peli*). *Noviisi* (328–329) also criticises the idea of economic sustainability: ‘Some criticise this basis; they think that emphasizing the stability of the world economics means removing consequences by their causes.’ On the other hand, *Miina, Ville ja kulttuurin arvoitus* (50) argues that Finland is able to pursue sustainable development because it is a wealthy nation: ‘[W]e can now afford to take other nations into account [...]’. In other words, a wealthy economy is a pre-requirement for sustainable development.

Majakka, *Noviisi* 7–9 and *Katse* mention international co-operation and climate negotiations. The textbooks agree that co-operation is necessary but challenging. *Katse* considers that China and India have a central role in cutting emissions:

Decisions made in rapidly developing countries such as China and India will [...] have the greatest impact. If they [...] fail to manage their emissions, the efforts of all other countries may be in vain. (Katse 257.)

Co-operation is also a key solution in the fictional story of flooding in *Matka Eedeniin* 5, though at a local level. Legislation, taxation, fair trade, and the promotion of vegetarianism are occasionally mentioned as societal solutions, while renewable energy, energy saving, and development of technology are mentioned as technical solutions to environmental problems. *Eeden* 7–9 (363, 385) encourages new thinking and morals by appealing for the Ten Commandments.

Environmental ethics

Five of the textbooks for years 7–9 have one or more specific sections for environmental ethics: value of nature, the question of animal rights, and environmental morality. *Eeden* 7–9 discusses environmental ethics in context of the Ten Commandments but does not provide comprehensive view to the issue. The topic of *Reilu peli* is democracy, and it does not explicitly discuss environmental ethics at all. The LR textbooks for years 1–6 do not include basic information about environmental ethics as a field of philosophy, apart from a reference to animal rights in *Suuri kertomus* 5–6 (214–215). The SE textbook series *Miina ja Ville* refers to

ethical principles connected to nature and the environment but offers no explicit presentation of environmental ethics. However, this is in line with the curricula for both subjects: ethical concepts are supposed to be taught later on.

From where does nature get its value? Is its value intrinsic or conferred by humans? *Katse* (187) asks these questions but leaves the answer open. Two LR textbooks (*Eeden* 7–9, *Majakka*) agree that nature has an intrinsic value based on God’s Creation. *Lipas* 9 and *Etiikkaa elämäkatsomustietoon* discuss the value of animals, concluding that animals have value as individuals, irrespective of whether they are useful for people or not. Concerning animal rights, the textbooks discuss animal testing, pets and factory farming. Justification for animal rights is that animals can feel pain (e.g. *Katse* 194–195). *Eeden* 7–9 (360) remarks that, according to the Bible, animals also have a right to rest on the Sabbath.

Environmental morality is discussed at a general level in all the textbooks for years 7–9. However, very little concrete advice is given. I will discuss this more along the Education *for* the environment.

Education *in* the environment

Since a textbook as an educational item belongs indoors rather than outdoors, it is natural to expect that textbooks are not at their strongest in regard to education *in* the environment. However, I considered it worth exploring whether the textbooks refer to outdoor experience or the aesthetics of nature. In this category I coded those texts that discuss aesthetics, observing nature or feelings towards nature. Figure 3 presents the frequency of issues connected to this theme in the textbooks analyzed.

	LR 1-2	LR 3-4	LR 5-6	SE 3-5	LR 7-9	SE 7-9
Discussion about feelings towards nature and the environment						
Discussion and stories about wilderness experience and the aesthetics of nature						
Encouragement to observe your own environment and spend time in nature						
Assignments to observe nature or consider your relationship with nature						

FIGURE 3. EDUCATION *IN* THE ENVIRONMENT IN THE TEXTBOOKS OF SCHOOL YEARS 1–9.

No mentions ☐ Mentioned in one or more of the textbooks, but not discussed ☐ Mentioned several times or discussed shortly ☐ Moderate discussion ☐

Feelings towards nature

The textbooks for all of the years 1–9 discuss feelings towards nature, but most references are short and not central to the topic of the text. Many textbooks briefly discuss feelings towards pets in connection with animal ethics. *Matka Eedeniin 6*, *Lipas 9* and *Etiikkaa elämäkatsomustietoon* refer to the sorrow caused by the death of a pet. The *Miina ja Ville* -series discusses the relationship between humans and pets several times, including aspects of trust and friendship but also the effort required to look after a pet. *Katse* observes that relationships with animals differ:

‘Love towards pets does not prevent us from eating pork or chicken, nor killing mosquitoes. Yet our attitude towards pigs or even mosquitoes differs from our attitude towards grass or trees in forests.’ (Katse, 192.)

This difference is considered to be a justification for animal rights.

Majakka asserts that appreciating nature is part of Finnish culture. ‘[In] the Finnish environment nature and modernity connect. [...] [In many Middle and Southern European countries] historical buildings are appreciated [...] but forests may even cause fear.’ (*Majakka*, 366.) *Katse* (71) also considers that a close relationship to nature is an important part of Finnish culture.

Surprisingly, many textbooks for years 1–6 describe fear associated with nature. Children in stories are afraid of spiders (*Suuri kertomus 1–2*), dark forest (*Tähti 1*), or blind fish in the swimming water (*Matka Eedeniin 6*). However, there are also examples of play and enjoyment in nature (*Matka Eedeniin 6*, 156–157, *Suuri kertomus 5–6*, 18). *Suuri kertomus 3–4* also has a story of a sacred moment between a boy and a wild goose that indicates a profound interest in nature and includes a spiritual experience.

Experiencing wilderness and the aesthetics of nature

Miina, Ville ja vintiöt compares the aesthetics of nature and art and states that beauty can be enjoyed in both of them. ‘There is power, greatness and timelessness in the beauty of nature’ (*Miina, Ville ja vintiöt*, 84). Nature is discussed both as an environment to explore (84–85) and as a landscape to be admired (89). *Miina* and *Ville* agree that different landscapes can have their own beauty, even the built environment. The *Miina ja Ville* -series and *Katse* also refer to natural places as cultural heritage.

Wilderness experience is rarely discussed explicitly in other textbook series. However, nature is occasionally a stage for events in textbooks for years 1–6. For example, in *Suuri kertomus 5–6* (18) a family learns about keeping the Sabbath by having a picnic outdoors and admiring the autumn colours. In a half-narrative, half-factual text about the Biblical plagues of Egypt, *Suuri kertomus 3–4* (88) colourfully describes the power of a storm.

Observing nature

The textbook authors seldom directly encourage observing and spending time in nature. *Tähti 3* (9) urges the reader to observe biodiversity, and *Miina, Ville ja vintiöt* (84, 86) suggests exploring the backyard. There is more direct encouragement in the assignments. Eight of the textbooks ask readers to reflect on their experience of the natural environment and write about this. The *Miina ja Ville* -series has the most diverse assignments, with activities familiar from environmental education field guides:

Find artwork that depicts nature [...] What is [the artist] telling us about nature? [...] Find yourself a comfortable place outdoors where you can observe nature. [...] Close your eyes and listen. Smell the air. [...] Write a haiku. (Miina ja Ville etiikkaa etsimässä, 76–77.)

Education for the environment

I coded four types of texts in the category of education for the environment: information about pro-environmental behaviour for an ordinary individual (of any age), examples of young people acting for the environment, direct encouragement to act, and ethical problems presented for the reader to solve. Figure 4 shows the frequency of issues connected to this theme in the textbooks.

	LR 1-2	LR 3-4	LR 5-6	SE 3-5	LR 7-9	SE 6-9
Information about an individual's opportunities to act for the environment						
Example stories of young people acting for the environment						
Encouragement to act						
Open-ended ethical problems						

FIGURE 4. EDUCATION FOR THE ENVIRONMENT IN THE TEXTBOOKS OF SCHOOL YEARS 1-9

No mentions ☐ Mentioned in one or more of the textbooks, but not discussed ☐ Mentioned several times or discussed shortly ☐ Moderate discussion ☐

An individual's opportunities to act

In general, there is little information in the textbooks about the opportunities for an individual to engage pro-environmental behaviour. Among the textbooks for years 1–6 only *Matka Eedeniin 6* and *Miina ja Ville* -series discuss the issue, and it is seldom mentioned in the LR textbooks for years 7–9. *Katse* and *Reilu peli* contain a certain amount of discussion.

Most suggestions for pro-environmental action relate to waste management: recycling, picking up litter, and reducing waste. Seven of the textbooks mention one or more of these. For example, *Katse* (252) and *Reilu peli* (115) ask their readers to observe the amount of rubbish they produce per day, and *Noviisi* (332) encourages finding out about recycling at school. Even where the text discusses several different ways in which an individual can act, recycling and waste are often highlighted in the text or by illustration. For example, in *Miina, Ville ja kulttuurin arvoitus* (97–98) Ville's family compiles a sustainable development plan for their home. The plan presents multiple actions, but the illustrations emphasize only recycling and litter.

Four books mention vegetarianism, either as an animal rights issue (*Etiikkaa elämäkatsomustietoon*, *Katse*, *Majakka*) or as a climate friendly diet (*Lipas* 9). *Majakka* (368) provides a brief discussion about motives for veganism but the other textbooks only discuss vegetarianism in one sentence. For example, *Lipas* 9 (116) notes briefly that 'eating less meat can be one way for climate change mitigation'. *Katse* (119) and *Reilu peli* (40) discuss conscious consumption as choices between right and wrong. Cycling, low indoor temperatures, growing vegetables, saving water, washable nappies, and organic food are also mentioned, but only in one or two of the textbooks. All in all, consumer choices targeted at food and housing get little space compared to recycling. This is in contradiction with recent research reports: meals and housing have a central role in consumption-derived environmental impacts (e.g. Saarinen et. al. 2011).

Seven of the textbooks discuss environmental action and methods for participation at some level. Five of them mention environmental NGOs. *Tähti 6* mentions petitions, letters to the editor and demonstrations as legal methods of getting attention. *Reilu peli* and *Katse* discuss opportunities to participate in decision-making but in general rather than in an environmental context.

Young people acting for the environment

Stories about young people acting for the environment are rare. *Katse* (252) has an example of school girls collecting donations for building a well in a village that is suffering from drought. Textbooks for years 1–6 contain some stories about making change in a child's own everyday life. *Suuri kertomus* 3–4 has a story about a boy confronting other boys who are vandalizing the school yard. In the *Miina ja Ville* -series Ville encourages his family to recycle, and Miina occasionally highlights environmental issues:

[Describing a theme school of her dreams:] Yeah, my school would be based on ecology and sustainable development. All energy for lights and heating would come from the school's own wind turbine. (Miina, Ville ja vintiöt, 48.)

Direct encouragement to act

The textbooks seldom encourage the reader directly to act for the environment. *Katse* (258) assumes that readers are used to recycling their cans and bottles. Six textbooks have assignments where they encourage readers to consider their own scope

and willingness to act, but only *Katse* (203, 252, 261, 266) and *Miina ja Ville etiikkaa etsimässä* (78-79, 83) include profound and diverse assignments. The assignments ask what the reader might be willing to give up for the environment, which specific problem the reader would want to solve, which NGO the reader might wish to join, whether the reader's school would need an environmental plan, and whether the reader could improve recycling in his or her own life.

Open-ended ethical problems

Several of the textbooks occasionally present questions without offering a ready answer. 'What is the difference between wanting and needing?' (*Matka Eedeniin* 5, 103). 'Which is more important; taking care of animal rights or poor people in developing countries?' (*Katse* 203). However, this is not a common method to gain interest for environmental issues. Questions are usually presented outside the main text, as stimulate questions or assignments.

Discussion

What does the textbook analysis about the role of LR and SE in environmental education? In both these subjects, the textbooks provide more information *about* the environment than support for education *in* or *for* the environment. This is of course not surprising, given that the focus is school textbooks. However, there are some examples in the data which demonstrate that the perspectives of education *in* and *for* the environment can be easily included in textbooks. Stories about spiritual experiences *in* nature, like the one in *Suuri kertomus* 3-4, can promote insight, intuition, opinion forming and emotions in environmental education (see Palmer 1998a, 166). The SE textbook *Katse* provides the reader with assignments and considerable background information in regard to acting *for* the environment, even though the information given is sometimes confusing, discouraging and distant.

The SE textbooks give more space for environmental issues than the Lutheran religion textbooks. In most of the LR textbooks environmental issues play a marginal role. However, neither the LR nor the SE textbooks succeed in developing environmental ethics into ideas applicable to a pupil's own life. Thus, Jickling's (2005, 26) suggestions of searching for the relationship between ethical ideas and everyday practice are not fulfilled. In regard to Palmer's (2004) orientations in teaching environmental ethics, the textbooks for years 7-9 and *Miina ja Ville* -series represent the 'pure intellectualist' orientation to some extent, although the often normative, factual text is not likely to advance critical thinking and analysis by itself. The occasional remarks on stewardship ethics in the LR textbooks might be interpreted as advocacy of that specific ethics, but this is seldom a strong theme in the textbooks.

The textbook authors do, however, connect theory with practical ideas in selected areas of ethics, such as human relationships. Therefore, I assume that the lack of material on everyday environmental concerns might not be intentional but instead an

issue of knowledge and resources. Conceptual distance is a challenge in interdisciplinary work; for example, most interdisciplinary research projects have their participants from adjacent fields of science (Huutoniemi et al. 2010, 86).

Environmental conceptual thinking might be an unfamiliar area for the textbook authors, which would explain why the textbooks contain unclear and inaccurate explanations of scientific concepts. Greater co-operation between different school subjects would strengthen the interdisciplinarity of environmental ethics education.

Despite occasional open-ended stimulus questions and stories, the material in the textbooks is usually narrative, factual text. Whether this is good for learning depends on how the textbook is used. Is its purpose to awaken the pupil's interest in the topic or is the textbook used mainly for rehearsing? Presenting problems and solutions facilitates learning, especially when first reading the material, as it makes the text interesting for pupils. However, narrative, factual texts may be better for revising. (Mikk 2000, 247–250.)

The learning path

The LR textbooks for years 1–5 include little information or discussion about environmental problems; nature is presented mainly in terms of beauty and enjoyment. The human relationship with nature is presented as unproblematic, with the exception of a few references to fear. In all the textbooks for year 6 there are some references to environmental problems, ethical problems concerning animals, or both, while the textbooks for years 7–9 present nature and the environment mainly in the context of environmental problems.

The situation thus diverges from the goals set in the national curricula. The textbooks for years 1–5 try to teach 'respect for nature', but they also ought to teach 'responsibility and making choices' (NCC 2004, 203). The core curriculum places a greater emphasis on the role of humans in shaping the environment in years 6–9 than in years 1–5 (NCC 2004, 206), but I believe there is scope for greater continuity, where complications and problems of the human-nature relationship would be discussed in greater depth each year, as pupils get older. This continuity already exists in the SE textbooks.

What is the right age to learn about environmental problems? Strife (2011, 49) prompts educators of young children to consider the age-appropriateness of their environmental messaging, as young children are not developmentally prepared to cope with global environmental issues. Focusing on distant and abstract environmental issues may cause children to feel overwhelmed by them. However, primary aged children already know about global problems through the media. (Strife 2011, 38–39.) I argue that a policy of silence would not help, and that the primary school environmental curriculum should focus on local environmental questions rather than global issues. Also, since the textbooks for years 1–5 already use stories as method, Jickling's (2005) idea of using stories as material for ethical environmental education would sit well with the tradition of the subject. Development of these aspects offers great potential.

Distant and discouraging information

The future of the environment is described in a pessimistic tone in many textbooks for years 7–9; some books even discuss the end of the world. The textbooks provide information about environmental change, but some books leave the societal aspects out of the discussion. Readers are likely to comprehend that solutions to environmental problems are something distant and abstract, and that ordinary individuals can have little impact on their success. Some textbooks recommend practices that the reader can adopt, but these tend to be relatively minor compared to the seriousness of the environmental problems presented.

How do pessimistic views affect pupils' interest in the issues? If environmental issues are over-dramatised, does this lead to rejection, because the text is not considered plausible? What are the pedagogical grounds for including mainly negative facts? Emotionally unpleasant information may lead to a student's rejection of the topic (Rickinson & Lundholm 2010) or to ecophobia (Strife 2011). But hope alone is not enough to promote action if there is a lack of concern. A combination of hope and worry is most likely to lead to climate action. (Ojala 2012.) I suggest that unnecessary dramatics be avoided when describing the state and future of the environment, and that instead we should orientate teaching towards their solutions.

Recycling and litter, however, are covered in the textbooks, when discussing pro-environmental behaviour. Discussing recycling as a principal form of pro-environmental behaviour in the context of serious global issues is misleading and contradictory. Recycling is an advisable habit, but it is neither an effective method for solving climate issues nor the only pro-environmental act that a 7–15 year old pupil can carry out. Moreover, concentrating on litter in environmental education may lead pupils to believe that climate change can be solved by refraining from not dropping litter (Nevanpää 2005).

The textbooks seldom offer the reader comprehensive information or advice on pro-environmental action. By focusing discussion only on minor acts, there is a danger of disempowering young people once they realize the ineffectiveness of the actions offered to them. Why not include multiple options in the textbooks, some of them easier to carry out, some more demanding, and let the readers decide where they stand? This would not constitute advocacy but advice, helping pupils apply ethical principles in their own lives.

Conclusions

Integrating global, interdisciplinary themes in textbooks is clearly challenging. Textbook authors have to interpret issues outside their field of specification in a form that is understandable to the young audience, fulfils the curricular requirements, relates to other content in the textbook, supplements the content discussed in other subjects, and promotes good education. So, how well did the authors of Finnish religious education and ethics textbooks succeed?

The most popular environmental theme to be discussed is human-nature relationship, which is consistent with the specific content of the disciplines. However, the discussions are rarely profound; but are instead short, normative statements. Some of the textbooks get lost in natural science, either promoting scientific information as the main theme or giving inaccurate and unclear information about environmental phenomena, or both. Furthermore, the discussions fail to bridge the human-nature relationship to what can be done to solve and prevent environmental problems. The textbooks seldom succeed in connecting environmental issues with pupils' own lives, and give little space to the elements of education *in* and *for* the environment.

Environmental teaching in religious and ethical education could be developed in a more effective direction. Environmental issues could be discussed more and in a range of contexts, especially in relation to worldviews and general ethics. If natural scientific information is included, it must be accurate. Sections on environmental ethics could be presented in more depth, more directly connected to everyday practices, and could include open-ended ethical problems for discussion. In early years, environmentally themed stories offer considerable potential in teaching ethics. However, to avoid causing ecophobia, the material should be balanced with a focus on action and solutions, rather than distant global problems.

A study of textbooks cannot, of course, reveal what really happens in the classroom. Further research would be useful to find out, how environmental issues are taught in religious and ethics education. To what extent do the teachers of these subjects consider themselves to be environmental educators? How do pupils interpret the texts they read? A comparative analysis of environmental education in different school subjects would provide new information about the possibilities and challenges of integrating crosscurricular, global issues in teaching.

References:

- Aarnio-Linnanvuori, E. & Ahvenisto, I. (2013). *Koulutuspolitiikka ja realismi ristiriidassa? Kestävä kehitys peruskoulun ja lukion taloustiedon oppikirjoissa*. In: K. Juuti & L. Tainio (eds.): *Ainedidaktinen tutkimus koulutuspoliittisen päätöksenteon perustana*. Helsinki: Suomen ainedidaktinen tutkimusseura.
- Benton Jr., R. & Benton, C.S. (2004). *Why Teach Environmental Ethics? Because We Already Do*. *Worldviews: Global Religions, Culture & Ecology* 8, no. 2/3: 227-242. Academic Search Complete, EBSCOhost (accessed October 29, 2012).
- Feng, L. (2012). *Teacher and student responses to interdisciplinary aspects of sustainability education: what do we really know?* *Environmental Education Research*, Vol. 18:1, (pp. 31-43).
- Ferreira, J. (2009). *Unsettling orthodoxies: education for the environment/for sustainability*. *Environmental Education Research* 15, no. 5: 607-620. Academic Search Complete, EBSCOhost (accessed February 14, 2013).

Fien, J. (2000). 'Education for the Environment: a critique'—an analysis. *Environmental Education Research* 6, no. 2: 179. Education Research Complete, EBSCOhost (accessed February 19, 2013).

Finnish National Core Curriculum for Basic Education (2004). Finnish national board of education.
http://www.oph.fi/english/sources_of_information/core_curricula_and_qualification_requirements/basic_education (Accessed 27th November 2012).

Guba, E.G. & Lincoln, Y.S. (2005). *Paradigmatic Controversies, Contradictions, and Emerging Confluences*. In N.K. Denzin & Y.S. Lincoln (eds.): *The Sage Handbook of Qualitative Research*, (pp. 191-215). Thousand Oaks, London & New Delhi: Sage Publications.

Hsieh, H. & Shannon, S. E. (2005). *Three Approaches to Qualitative Content Analysis*. *Qualitative Health Research*, no 15: 1277-1287.
<http://qhr.sagepub.com/content/15/9/1277> (accessed February 8, 2013).

Huutoniemi, K., Klein, J. T., Bruun, H., Hukkinen, J. (2010) *Analyzing interdisciplinarity: Typology and indicators*. *Research Policy* 39: (pp. 79-88).

Jickling, B. (2005). *Ethics Research in Environmental Education*. *Southern African Journal of Environmental Education*, Vol. 22: 20-34.
<http://www.jickling.ca/images/Jickling,%20Ethics%20Research,%20web.pdf> (accessed November 11, 2012).

Jickling, B. 2009 [2005]. *Education and advocacy: a troubling relationship*. In: Johnson, E. & Mappin, M. (eds.): *Environmental Education and Advocacy Changing Perspectives of Ecology and Education*, (pp. 91-113). Cambridge: Cambridge University Press.

Jickling, B. & Spork, H. (1998). *Education for the environment: A critique*. *Environmental Education Research* 4, no. 3: 309. Education Research Complete, EBSCOhost (accessed February 19, 2013).

Kallioniemi, A. & Matilainen, M. (2011). *Headmasters' Conceptions of the Finnish Religious Education - Solution from the Perspective of Human Rights*. *Nordidactica - Journal of Humanities and Social Science Education*, no 2: 1-14. <http://kau.diva-portal.org/smash/record.jsf?pid=diva2:469187> (accessed February 7, 2013).

Kopnina, H. (2012). *Education for sustainable development (ESD): the turn away from 'environment' in environmental education?* *Environmental Education Research* 18, no. 5: 699-717. Academic Search Complete, EBSCOhost (accessed October 29, 2012).

Kumpulainen, T. (ed.) (2012). *Koulutuksen tilastollinen vuosikirja 2011. Koulutuksen seurantaraportit 2012:5*. Helsinki: Opetushallitus.

Mikk, J. (2000). *Textbook: Research and Writing*. Frankfurt am Main; Berlin; Bruxelles; New York; Oxford, Wien: Lang.

NCC (*National Core Curriculum for Basic Education 2004*) (2004). Finnish National Board of Education.
http://www.oph.fi/english/sources_of_information/core_curricula_and_qualification_requirements/basic_education (accessed 27.11.2012).

Nevanpää, T. (2005). "*Sillä vois olla jotain tekemistä näitten kasvihuonekaasujen kanssa*": ilmastonlämpeneminen yläluokkalaisten käsityksissä. Jyväskylä: Jyväskylän yliopisto, koulutuksen tutkimuslaitos.

Ojala, M. (2012). *Hope and climate change: the importance of hope for environmental engagement among young people. Environmental Education Research*, 18:5, 625-642.

Orr, D. (1992): *Ecological literacy: education and the transition to a postmodern world*. State University of New York.

Paavola, S. (2006). *On the Origin of Ideas: An Abductivist Approach to Discovery*. Philosophical Studies from the University of Helsinki 15.
<http://hdl.handle.net/10138/19405> (accessed April 29, 2013).

Palmer, C. (2004). *Introduction To Worldviews: Environment, Culture, Religion Special Edition on Teaching Environmental Ethics. Worldviews: Global Religions, Culture & Ecology* 8, no. 2/3: 151-161. Academic Search Complete, EBSCOhost (accessed October 29, 2012).

Palmer, J. A. (1998a). *Spiritual ideas, environmental concerns and educational practice*. In: D. E. Cooper & J. A. Palmer (eds.): *Spirit of the Environment. Religion, Value and Environmental Concern*, pp. 146-167. London: Routledge.

Palmer, J. A. (1998b). *Environmental education in the 21st century: theory, practice, progress and promise*. London: Routledge.

Rickinson, M. & Lundholm, C. (2010). *Exploring Student Learning and Challenges in Formal Environmental Education*. In: R. B. Stevenson & J. Dillon (eds.): *Engaging Environmental Education: Learning, Culture and Agency*. 13-29.

Saarinen, M., Kurppa, S., Nissinen, A. & Mäkelä, J. (eds.) (2011). *Aterioiden ja asumisen valinnat kulutuksen ympäristövaikutusten ytimessä. ConsEnv-hankkeen loppuraportti*. Ministry of the Environment [in Finland].
<http://www.ymparisto.fi/download.asp?contentid=127955&lan=fi> (accessed April 29, 2013).

Salmenkivi, E. (2007). *Kestävä kehitys ja elämäntietämisen opetus*. In: J. Lavonen (ed.). *Tutkimusperustainen opettajankoulutus ja kestävä kehitys. Ainedidaktinen symposiumi Helsingissä 3.2.2006 Osa 1*, (pp. 91-103). Soveltavan kasvatustieteen laitoksen tutkimuksia 285. Helsinki: Helsingin yliopisto.

Solomon, J. (2003). *Spirituality in science education: studying the environment*. *Interdisciplinary science reviews* Vol. 28, No. 4. (pp. 251-258).

Strife, S. J. (2012). *Children's Environmental Concerns: Expressing Ecophobia*. *Journal of Environmental Education* 43, no. 1: 37-54. Academic Search Complete, EBSCOhost (accessed February 26, 2013).

Tapio, P. & Willamo, R. (2008). *Developing interdisciplinary environmental frameworks*. *Ambio – A journal of the human environment* 32(2). 125-133.

The Tbilisi Declaration. (1978). Connect. UNESCO-UNEP Environmental Education Newsletter. Vol. III, no 1.
<http://unesdoc.unesco.org/images/0015/001563/156393eb.pdf> (Accessed 31st January 2013).

Toh, S. H. & Cawagas, V. F. (2010): *Transforming the Ecological Crisis: Challenges for Faith and Interfaith Education in Interesting Times*. In: F. Kagawa & D. Selby (eds.): *Education and Climate Change. Living and Learning in Interesting Times*. London and New York: Routledge.

Uitto, A., & Saloranta, S. (2012). *Aineenopettajat kestävän kehityksen kasvatuksen toteuttajina*. In: H. Risku-Norja, E. Jeronen, S. Kurppa, M. Mikkola A. Uitto (eds.). *Ruoka – oppimisen edellytys ja voimavara*, (pp. 7784.) Helsinki: Helsingin yliopisto.

Material references:

Halme, L., Parviola, J., Sjöblom, T. & Vaaramo, R. (2008). *Majakka. Uskontokirja*. Porvoo: WSOY.

Heinimäki, J. & Soikkeli, V. (2012). *Noviisi 7-9*. Keuruu: Otava.

Heininen, S., Jolkkonen, J., Ketola, K., Merenlahti, P., Junnonen, A., Jussila, P., Laturi, K., Stenius, M. (2007). *Eeden 7-9*. Helsinki: Edita.

Holm, K., Kronlund, M., Parviola, J. & Vaaramo, R. (2011). *Etiikkaa elämäntietämiseen*. Porvoo: WSOYpro.

Holm, K., Kronlund, M., Parviola, J. & Vaaramo, R. (2008). *Lipas 7 Maailmanuskonnnot*. Porvoo: WSOYpro.

Holm, K., Kronlund, M., Parviola, J. & Vaaramo, R. (2009). *Lipas 8 Kirkot*. Porvoo: WSOYpro.

Holm, K., Kronlund, M., Parviola, J. & Vaaramo, R. (2010). *Lipas 9 Raamattu ja etiikka*. Porvoo: WSOYpro.

Honkala, S., Sundström, K. & Tuominen, R. (2008). *Miina, Ville ja kulttuurin arvoitus*. Helsinki: Opetushallitus.

Honkala, S., Sundström, K. & Tuominen, R. (2006). *Miina, Ville ja vintiöt*. Helsinki: Opetushallitus.

Honkala, S., Tukonen, A. & Tuominen, R. (2010). *Miina ja Ville etiikkaa etsimässä*. Helsinki: Opetushallitus.

Honkanen, A., Huotari, E., Salmenkivi, E. & Tirkkonen, J. (2010). *Katse*. Helsinki: Edita.

Honkanen, A. & Tirkkonen, J. (2009). *Reilu peli: peruskoulun elämäkatsomustiedon oppikirja kansalaisuus ja hyvä yhteiskunta -kurssia varten luokille 6-9*. Helsinki: Opetushallitus.

Junkkaala, M., Lund, P., Merenlahti, P. & Myllyntausta, S. (2006). *Matka Eedeniin 3-4*. Helsinki: Edita.

Junkkaala, M., Lund, P., Merenlahti, P. & Myllyntausta, S. (2007). *Matka Eedeniin 5*. Helsinki: Edita.

Junkkaala, M., Lund, P., Merenlahti, P. & Myllyntausta, S. (2011). *Matka Eedeniin 6*. Helsinki: Edita.

Niittynen, A., Similä, M. & Vidgren, K. (2008). *Tähti 1 Uskonnon oppikirja*. Keuruu: Otava.

Niittynen, A., Similä, M. & Vidgren, K. (2009). *Tähti 2 Uskonnon oppikirja*. Keuruu: Otava.

Nisonen, R., Pyysiäinen, M. & Töllinen, M. (2003). *Suuri kertomus 1-2 Elämä edessä*. Porvoo: WSOY.

Nisonen, R., Pyysiäinen, M. & Töllinen, M. (2004). *Suuri kertomus 3-4 Matkalla*. Porvoo: WSOY.

Nisonen, R., Pyysiäinen, M. & Töllinen, M. (2005). *Suuri kertomus 5-6 Ihmisten keskellä; Parempi maailma*. Porvoo: WSOY.

Saine, H., Sirola, R. & Uljas, M. (2004). *Tähti 3 Uskonnon oppikirja*. Keuruu: Otava.

Saine, H., Sirola, R. & Uljas, M. (2006). *Tähti 4 Uskonnon oppikirja*. Keuruu: Otava.

Saine, H., Sirola, R. & Uljas, M. (2007). *Tähti 5 Uskonnon oppikirja*. Keuruu: Otava.

Saine, H., Sirola, R. & Uljas, M. (2008). *Tähti 6 Uskonnon oppikirja*. Keuruu: Otava.